Natural Immunity in the African Meningitis Belt to *Neisseria meningitidis* Serogroup X: A Seroprevalence Study

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Introduction

- 1.2 million worldwide cases, annually
- 6 meningococcal serogroups are responsible for outbreaks: A, B, C, Y, W and X.
- Serogroup A outbreaks have been mostly eliminated in the African meningitis belt due to the successful implementation of MenAfriVac.
- Other serogroups now pose a risk in the African meningitis belt: C, W and X.
Study Aims

- Assess natural immunity to serogroup X within a community in Niger, West Africa using a Serum Bactericidal Antibody (SBA) assay.
- Provide data prior to the introduction of a pentavalent ACYWX conjugate vaccine, NmCV-5 (Serum Institute of India).

Figure 2: Distribution of sub-Saharan meningitis belt, Africa. Areas shaded in dark blue are at high epidemic risk of IMD, areas shaded in blue are at epidemic risk of IMD.
Methods

- 377 serum samples selected from the previous MenAfriCar study, conducted at the VEU (UKHSA).
- SBA assay measured the level of circulating antibody to serogroup X in serum samples.
- A putative protective SBA titre is defined as ≥8.
- Data obtained were analysed to quantify the level of natural immunity to serogroup X, prior to the introduction of NmCV-5.
Results

- Natural immunity to serogroup X was present in 52.3% of study participants.
- Highest putative protective titres were seen in age group 5-14 years-old (73.9%).
- Lack of protection to serogroup X (SBA titre of <4) was shown in each of the age groups (<1 year: 100%, 1-4 years: 45.6%, 5-14 years: 20.8%, 15-29 years: 42.4%, 30+ years: 55.7%).

Figure 5: Study participants (n=377) organised by age group, stratified by SBA titre to *Neisseria meningitidis* serogroup X.
Further Studies

• Data obtained provide a natural baseline of immunity to serogroup X in Niger, West Africa.

• Seroprevalence data support the requirement for implementation of NmCV-5 ACYWX conjugate vaccine into the sub-Saharan meningitis belt.

• Following implementation of NmCV-5 ACYWX conjugate vaccine, a follow-up seroprevalence study could be completed which will determine the impact of the NmCV-5 vaccine.
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